

INTE 21233

Web Applications Development - 1

Final Project - Architectural Diagrams

Group - 8

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Table of Contents

1. Selected Web Architecture: Monolithic Architecture	2
2. Justification for Choosing Monolithic Architecture	2
1. <i>Simplicity and Ease of Development</i>	2
2. <i>Performance</i>	3
3. <i>Cost-Effective</i>	3
4. <i>Easier Management</i>	3
3. Why One-Tier Architecture	4
4. Sign Up	5
5. Log In	6
6. Add Item	7
7. Update Item	8
8. Delete Item	9
9. Add Category	10
10. Delete Category	11
11. View Item	12
12. Search	13
13. Create Report	14
14. View Account	15
15. Update Account	16
16. Delete Account	17

1. Selected Web Architecture: Monolithic Architecture

In our web application, we have chosen to implement a monolithic architecture. This approach involves consolidating all aspects of the system—including the user interface, business logic, and database—within a single, cohesive application that runs on a single server or machine.

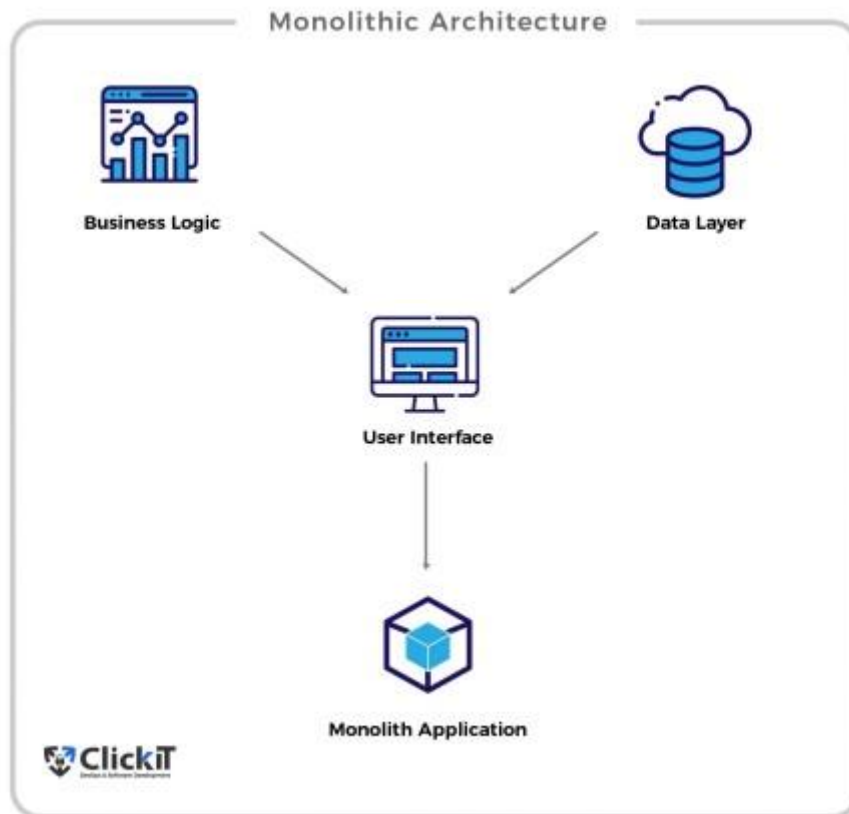


Figure 1. Monolithic Architecture

2. Justification for Choosing Monolithic Architecture

1. Simplicity and Ease of Development

- Monolithic architecture is straightforward to implement and deploy. Since all components are tightly integrated and hosted on a single machine, the development process is more streamlined.
- Managing code in a single codebase simplifies the development process, making it easier to understand, develop, test, and deploy the application.

2. Performance

- Given that all components reside on the same machine, communication between the user interface, business logic, and database is faster and more efficient. This is particularly beneficial for smaller applications with a limited user base where latency is a concern.
- The absence of network latency between components (compared to a distributed architecture) ensures quick data retrieval and processing.

3. Cost-Effective

- By consolidating everything onto a single server, we reduce the infrastructure and operational costs associated with maintaining multiple servers or microservices. This makes it an ideal choice for small to medium-sized projects with limited budgets.

4. Easier Management

- A monolithic architecture allows for easier monitoring and maintenance. Since everything is centralized, there's only one application to deploy, update, and monitor.
- There is no need to manage inter-service communication or handle the complexities of distributed systems, which simplifies the management and troubleshooting processes.

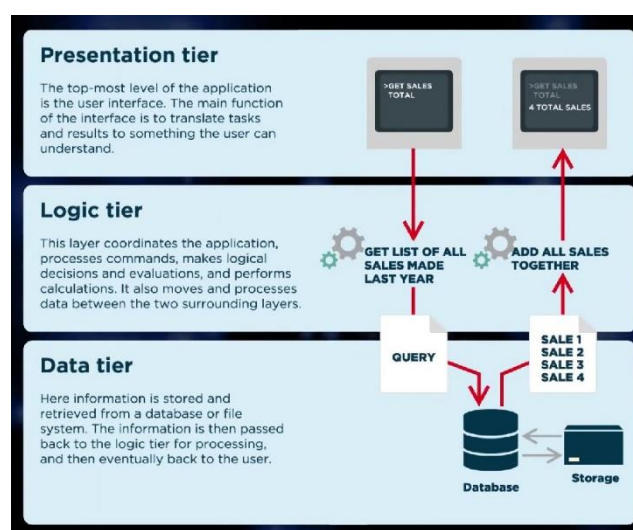


Figure 2. Tiers of monolithic architecture

3. Why One-Tier Architecture

- One-tier architecture is best suited for:
 - **Small to Medium-Sized Applications:** Applications with a limited scope that don't require extensive scalability or flexibility.
 - **Local Applications:** Software that is intended to run on a single machine, such as desktop applications, standalone tools, or systems with minimal external dependencies.
 - **Tightly Integrated Systems:** Applications where the user interface, business logic, and data storage are closely related and don't require separation.

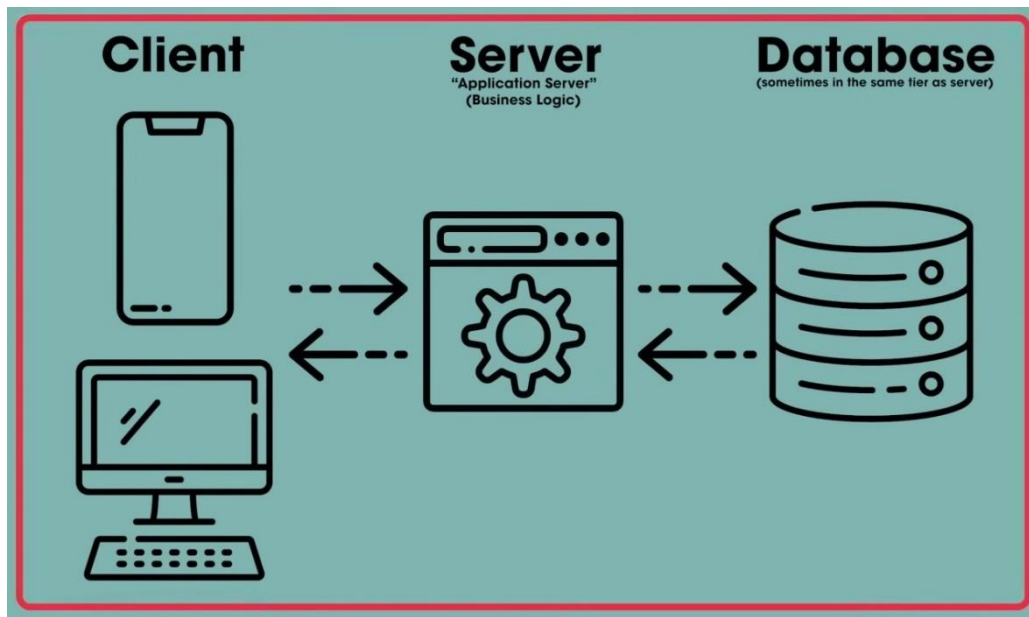
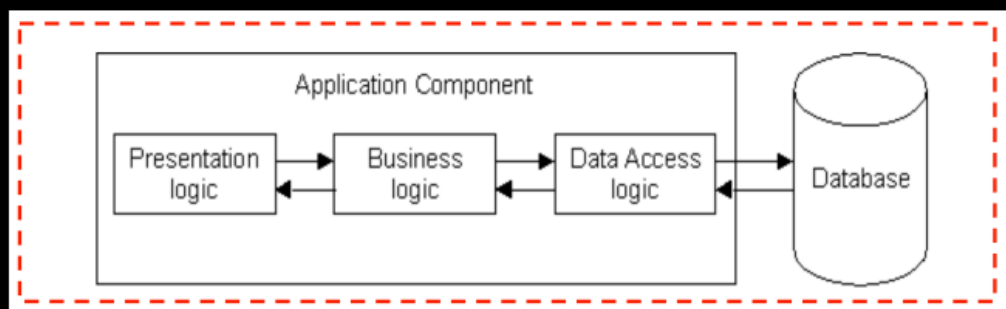


Figure 4. One-tier Architecture (Simplified)

1-TIER ARCHITECTURE



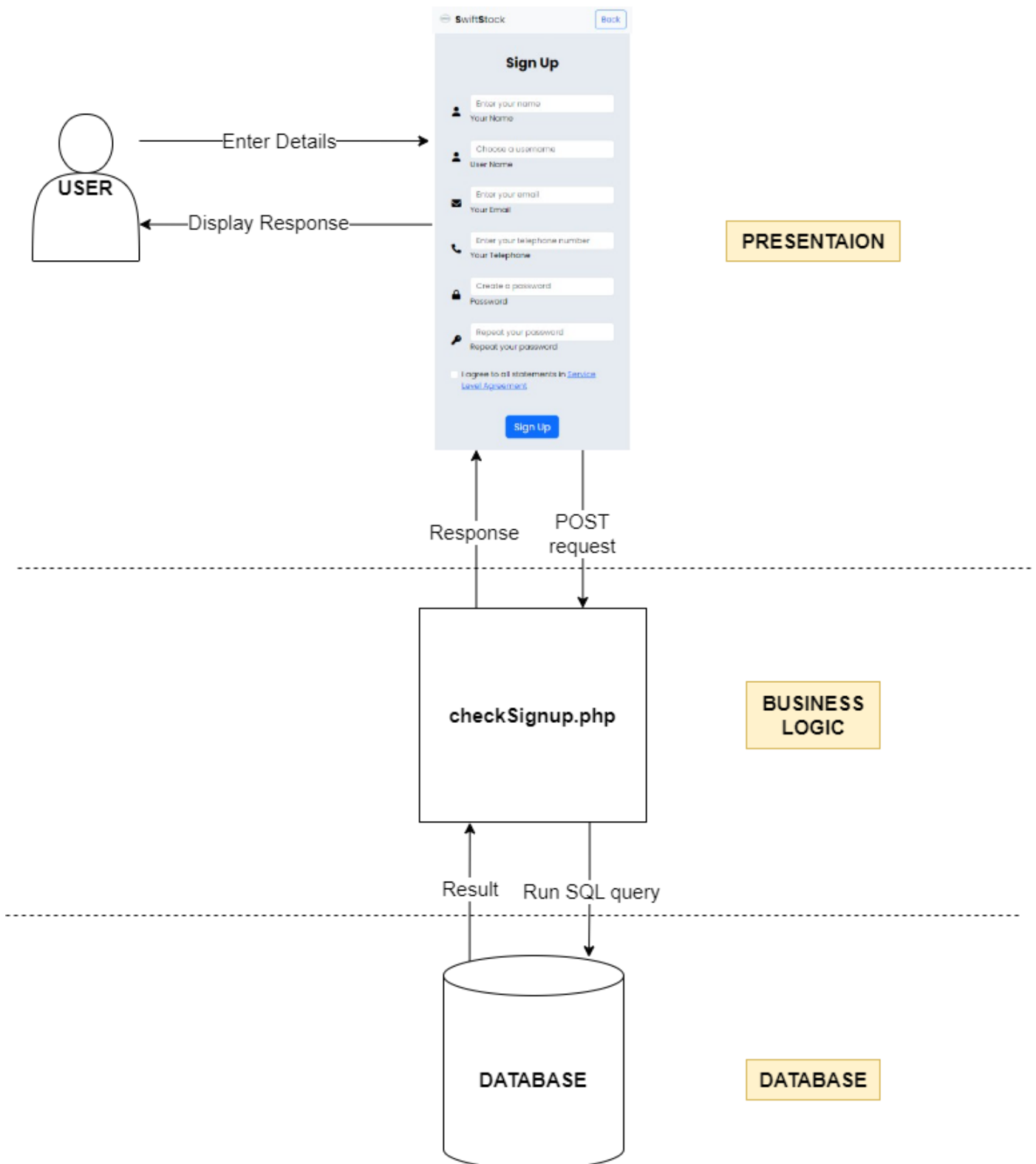
- All 3 layers are on the same machine
- Presentation, Logic, Data layers are tightly connected

Figure 3. One-tier Architecture (Detailed)

4. Sign Up

Sign Up

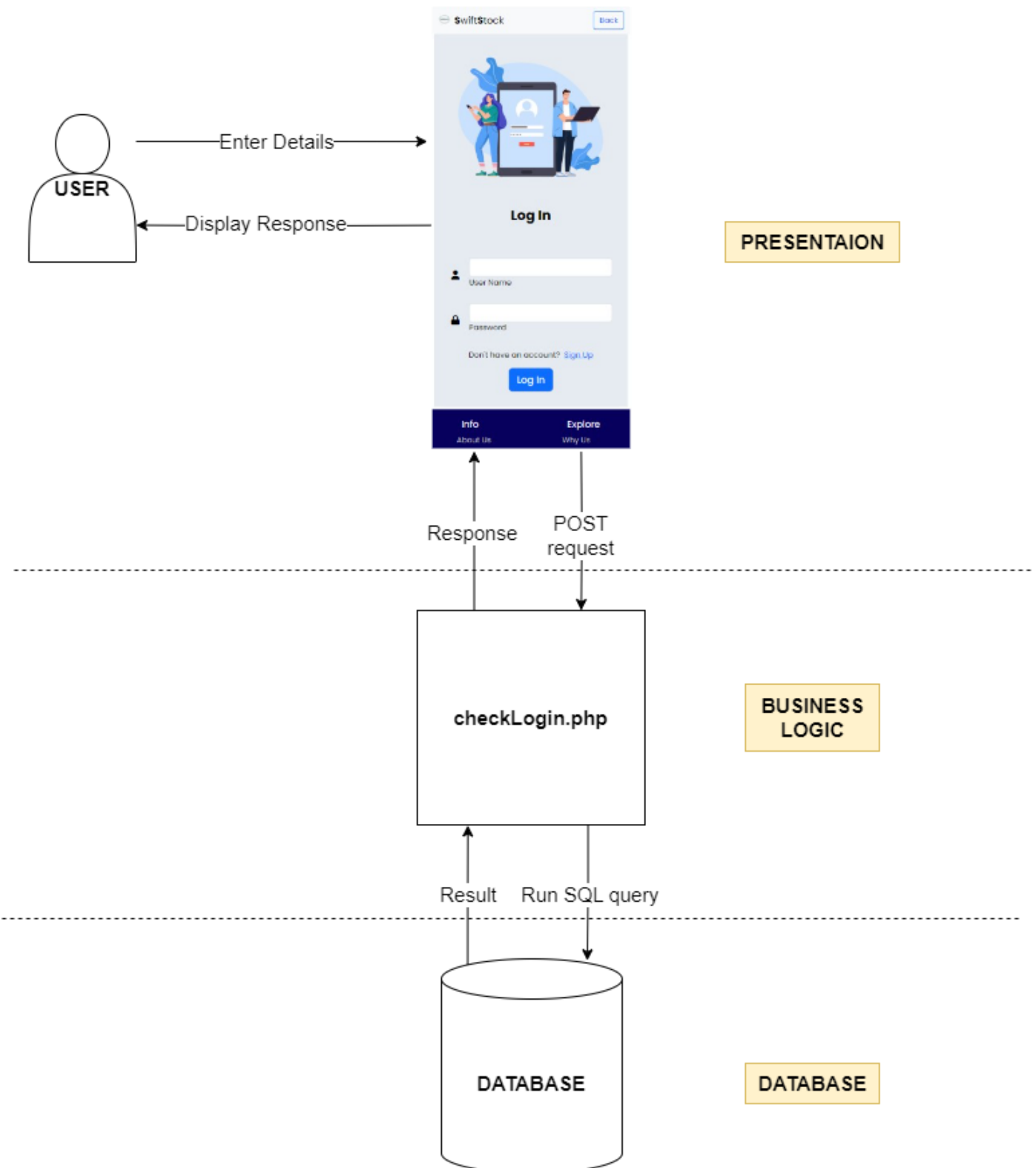
This page allows new users to register by providing their personal information. The sign-up form collects data such as name, username, email, telephone number, and password. Feedback is provided to the user based on the outcome of their registration attempt.



5. Log In

Log In

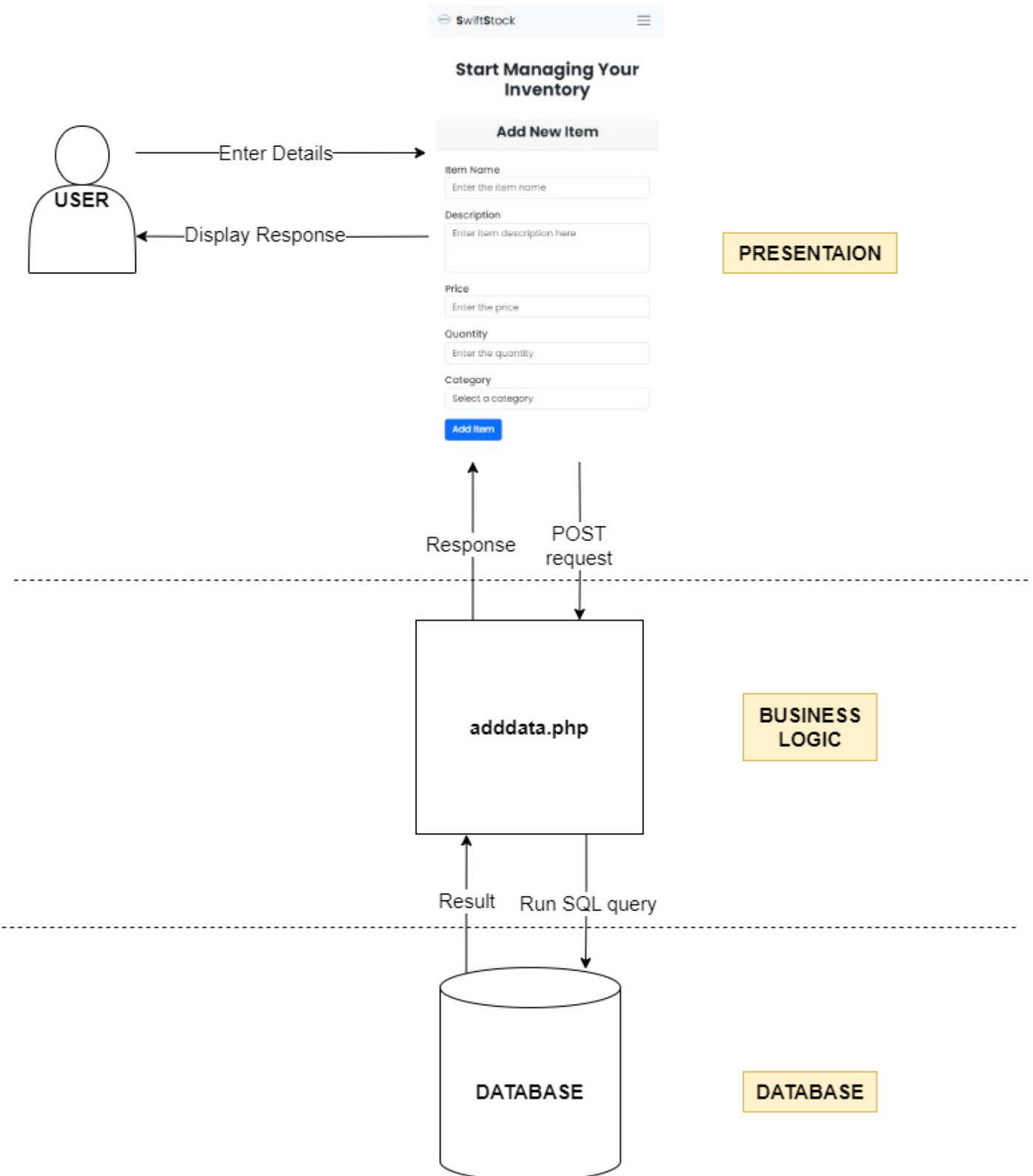
Log in is designed to allow users to enter their credentials to access the system. If a user is already logged in, they are redirected to the home page. The login page provides a form where users can input their username and password, and it also handles displaying error messages if the login fails..



6. Add Item

Add Item

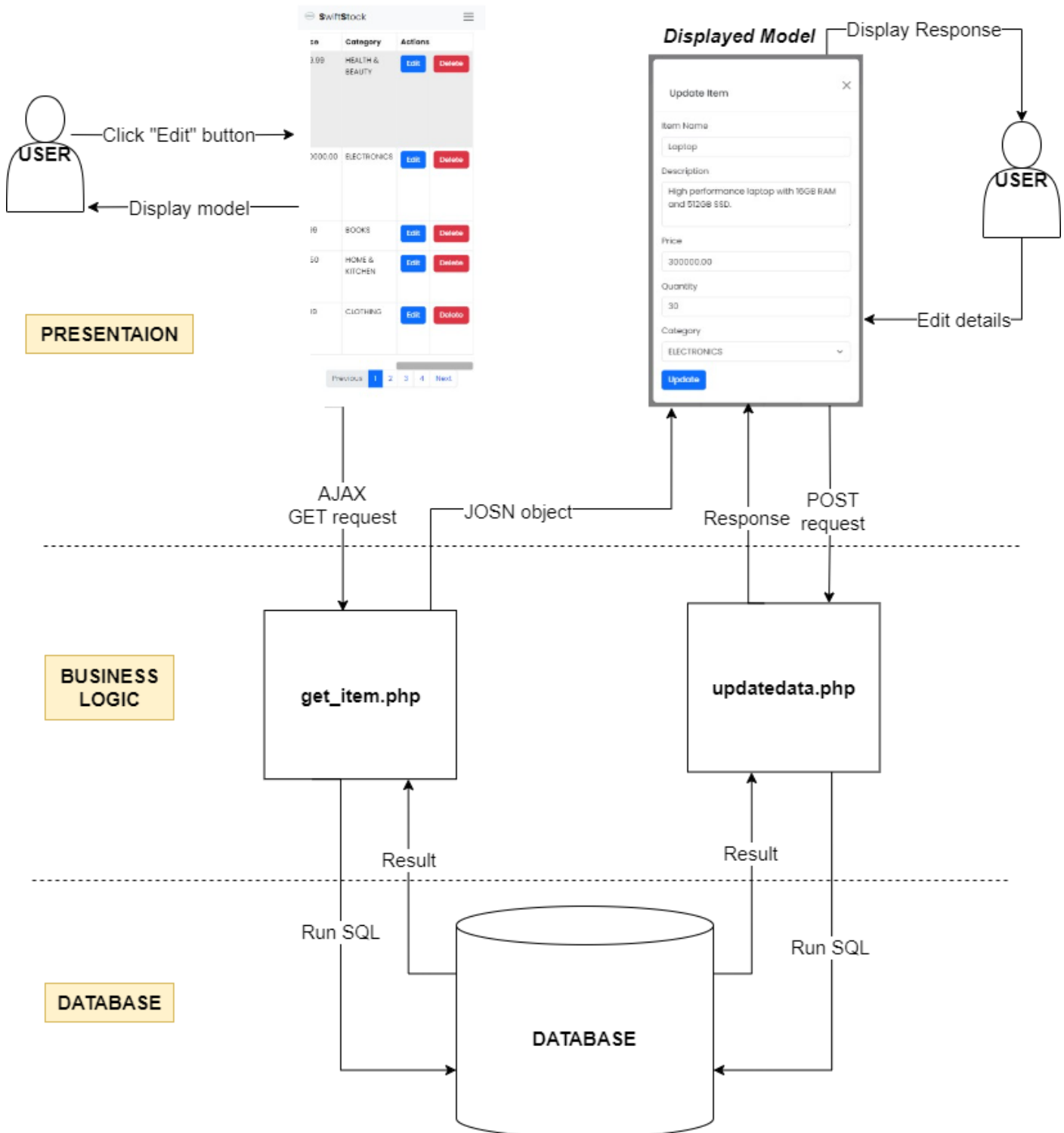
Users can input details about new inventory items and submit them to be added to the system.



7. Update Item

Edit Item

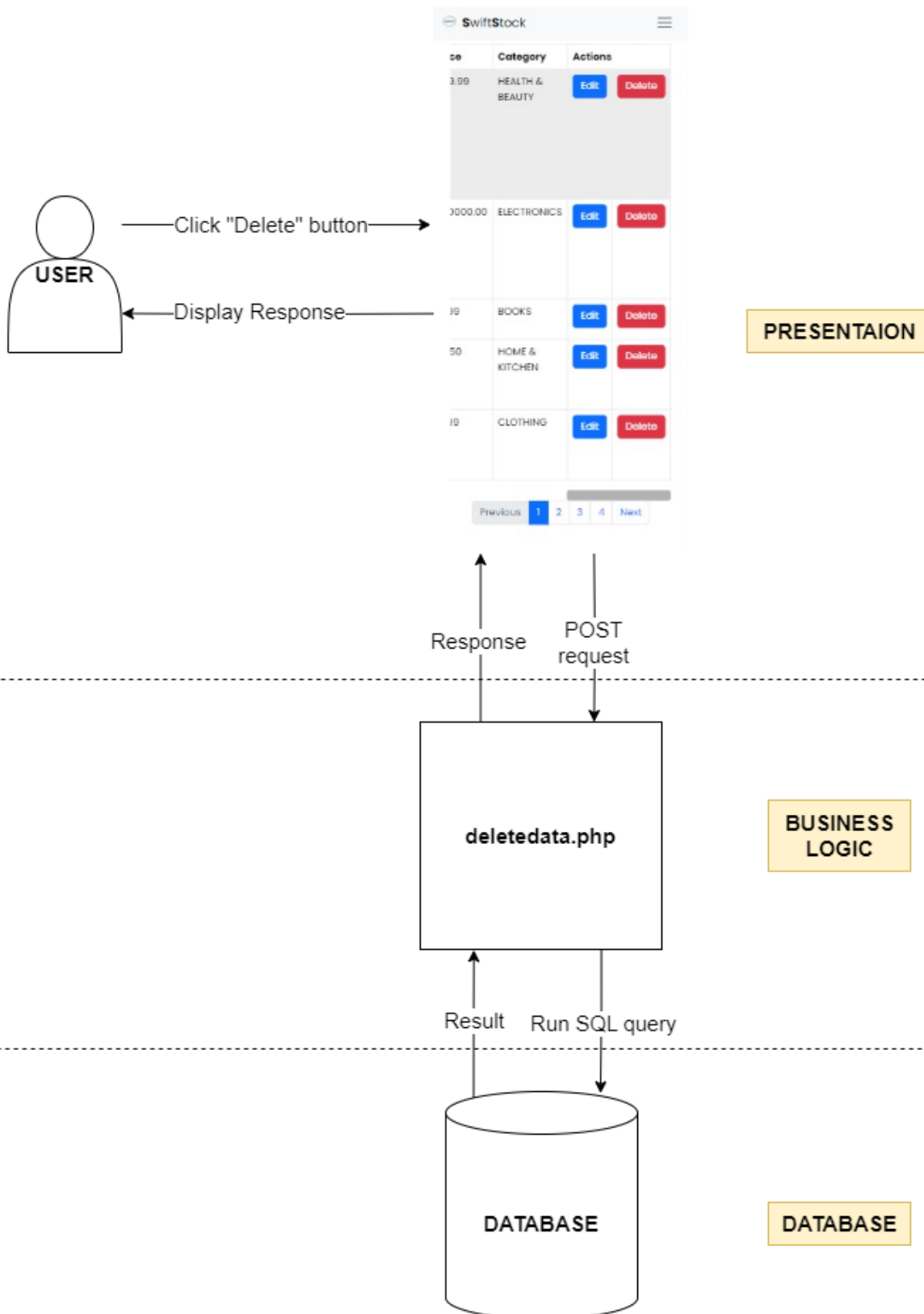
Users can edit existing items through a modal form that is dynamically populated with the item's current details.



8. Delete Item

Delete Item

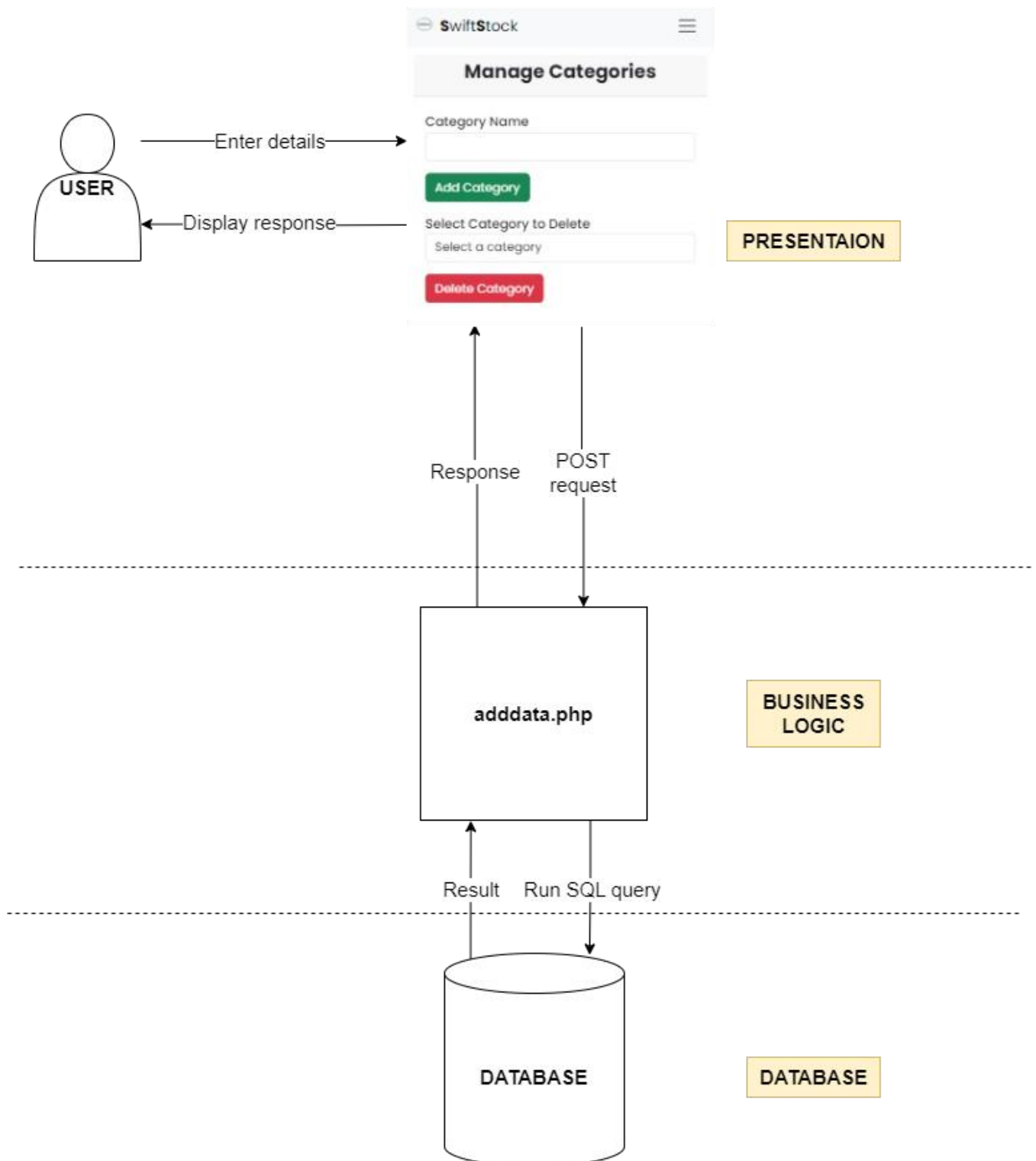
Users can delete existing items by clicking the "Delete" button.



9. Add Category

Add Category

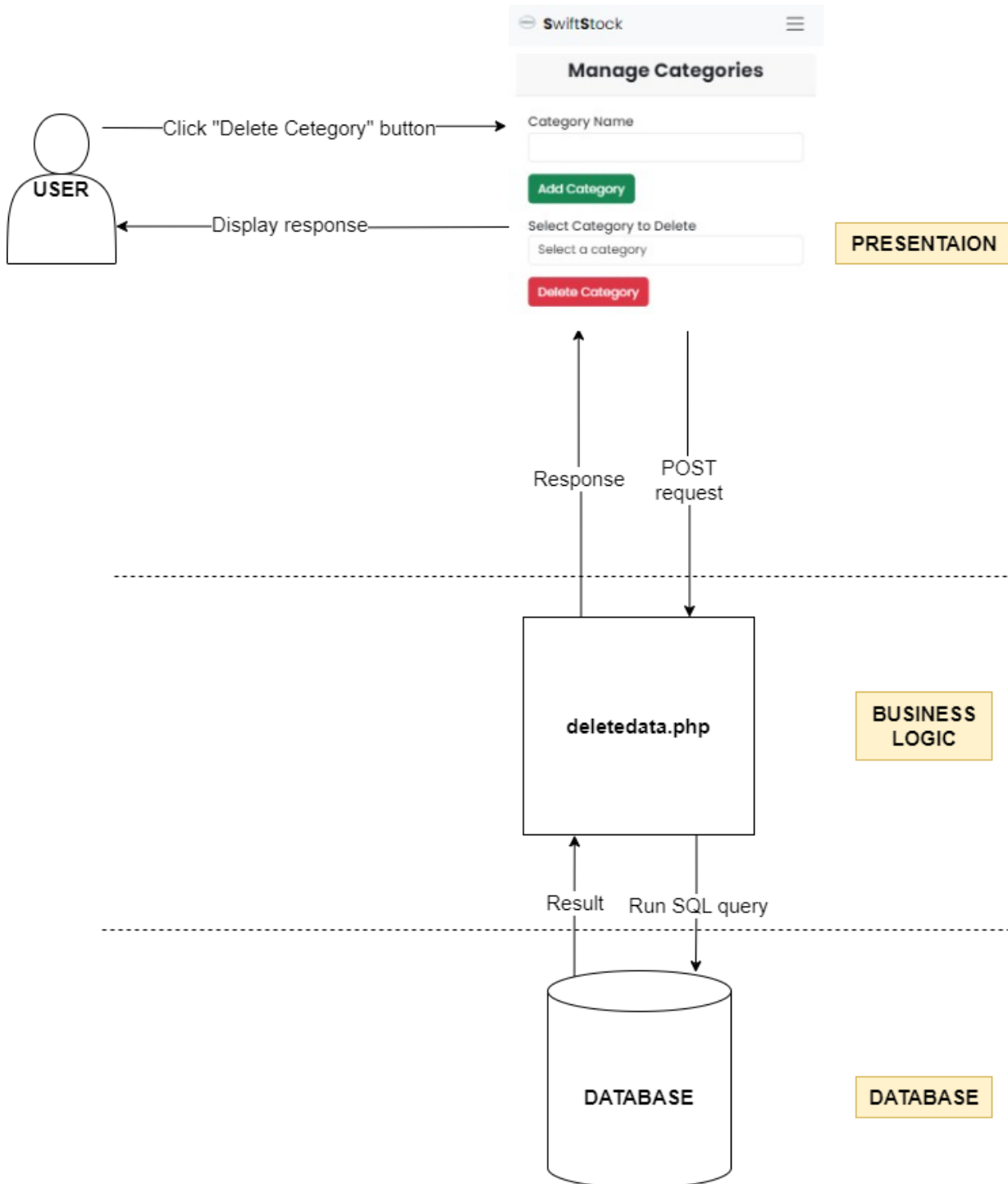
Users can add new categories.



10. Delete Category

Delete Category

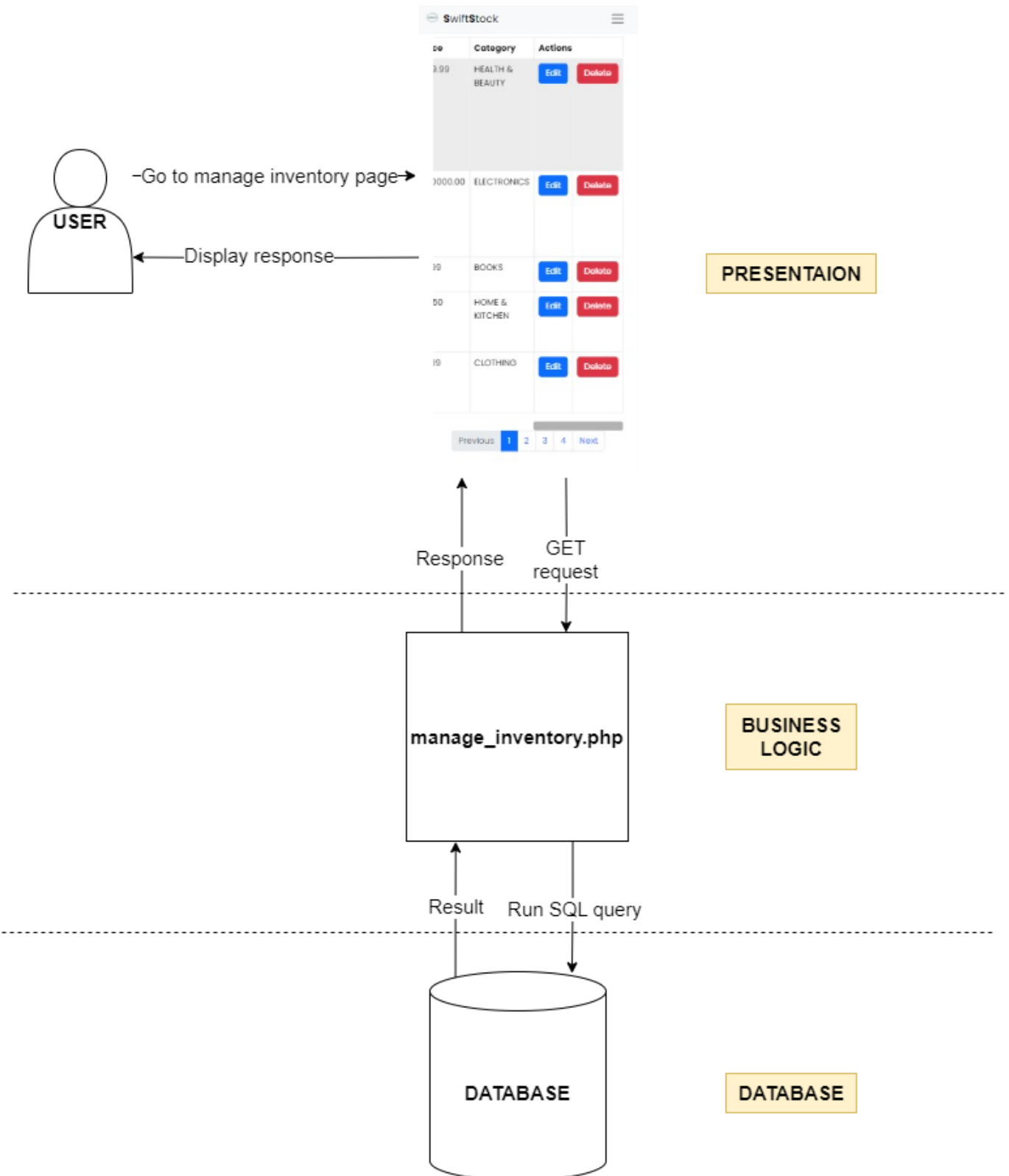
Users can delete existing categories from the inventory.



11. View Item

View Items

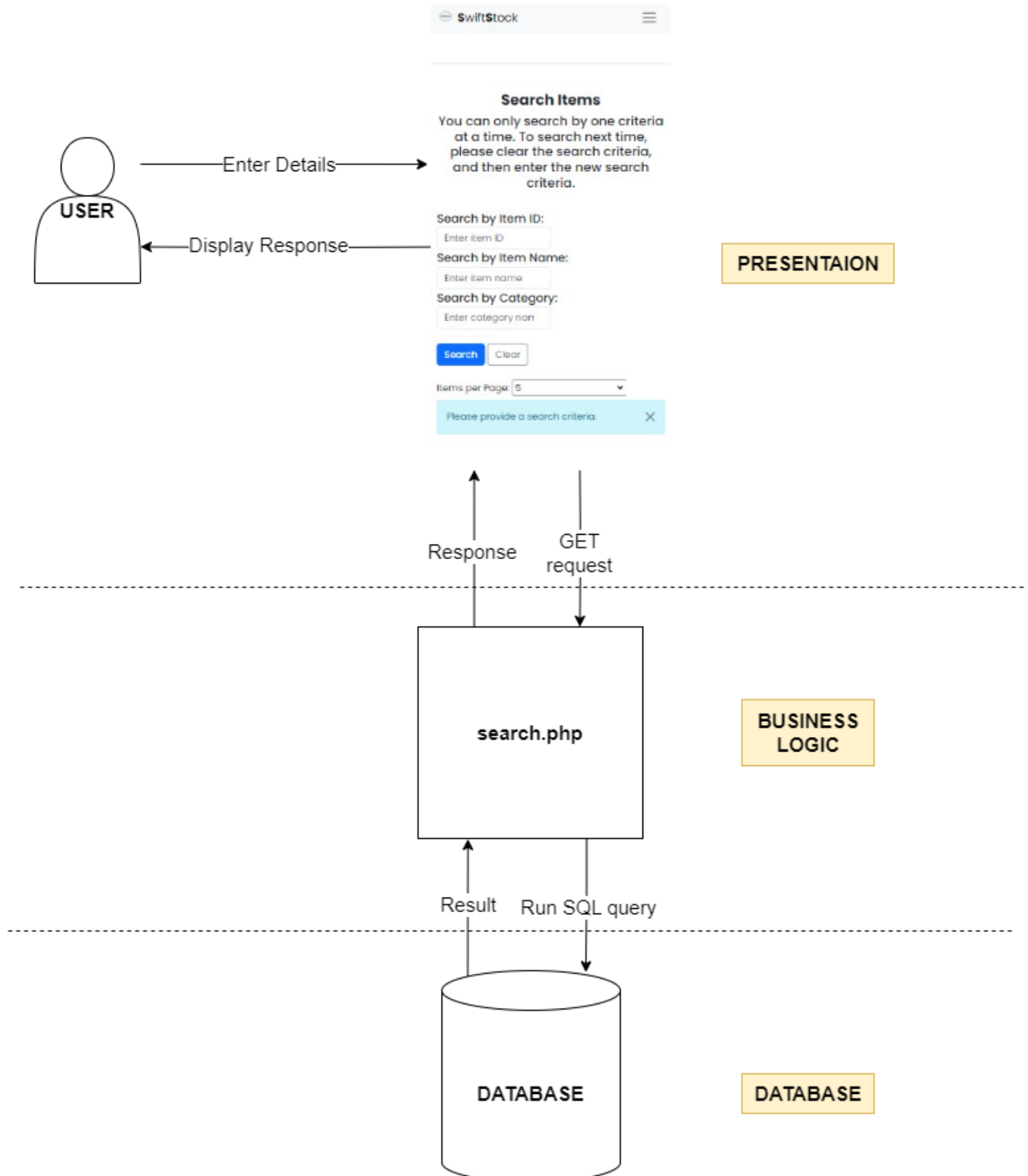
Users can see a list of all inventory items, including their details such as name, category, price and quantity.



12. Search

Search

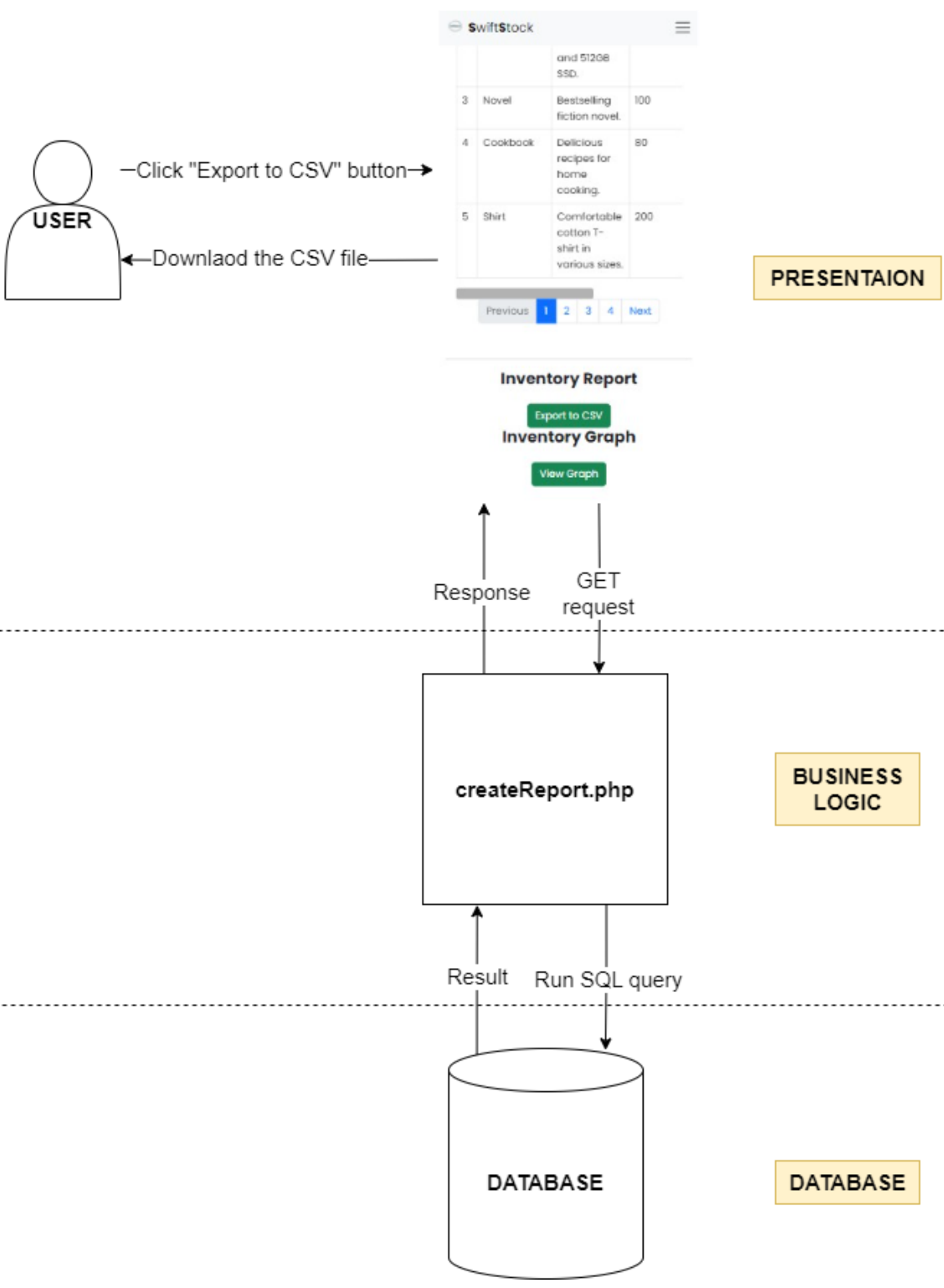
This allows users to search for items in the inventory system. Users can search by item ID, name, or category, view the results, and navigate through multiple pages of results.



13. Create Report

Report Generation

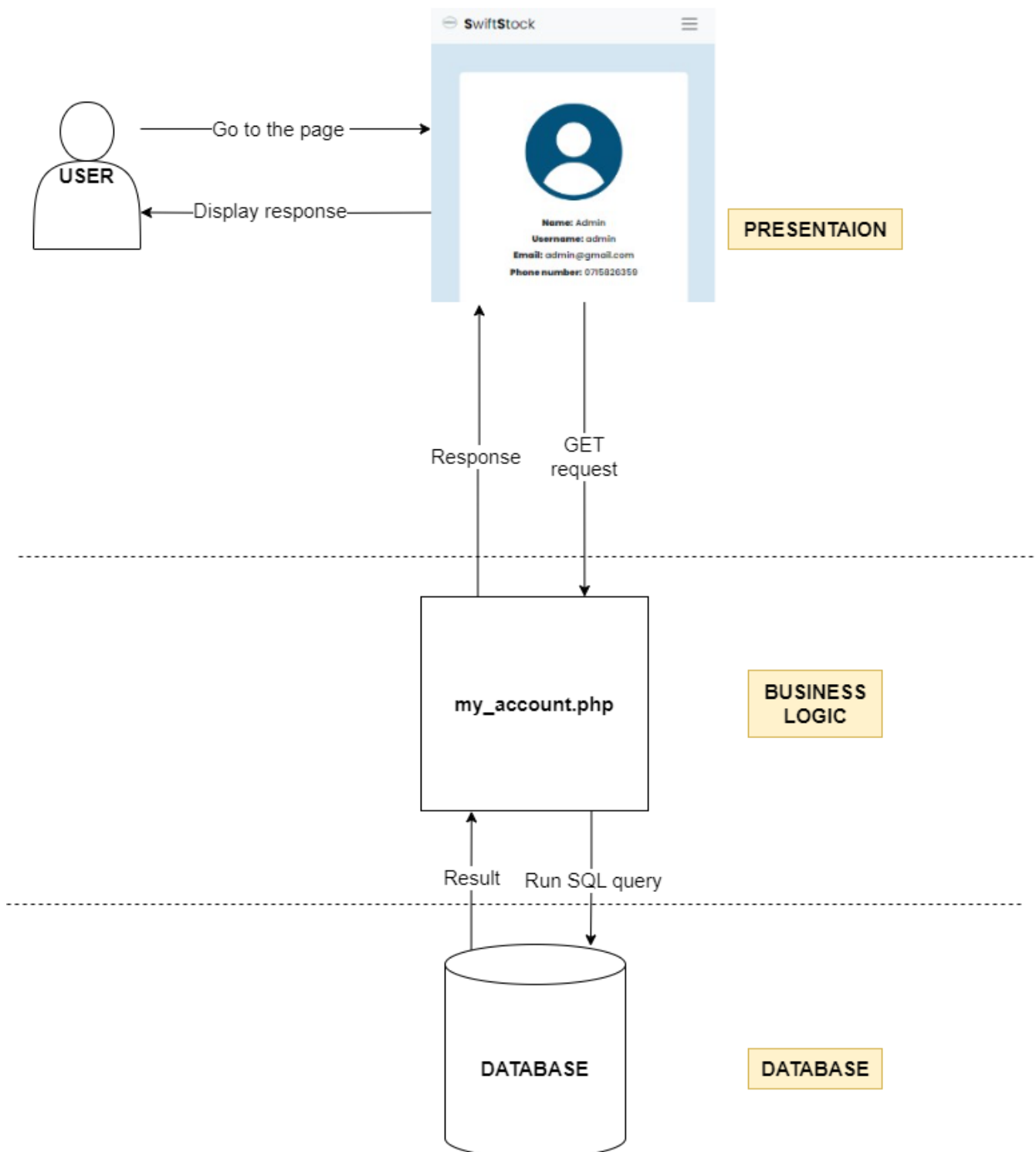
Users can export the inventory data as a CSV file.



14. View Account

View Account

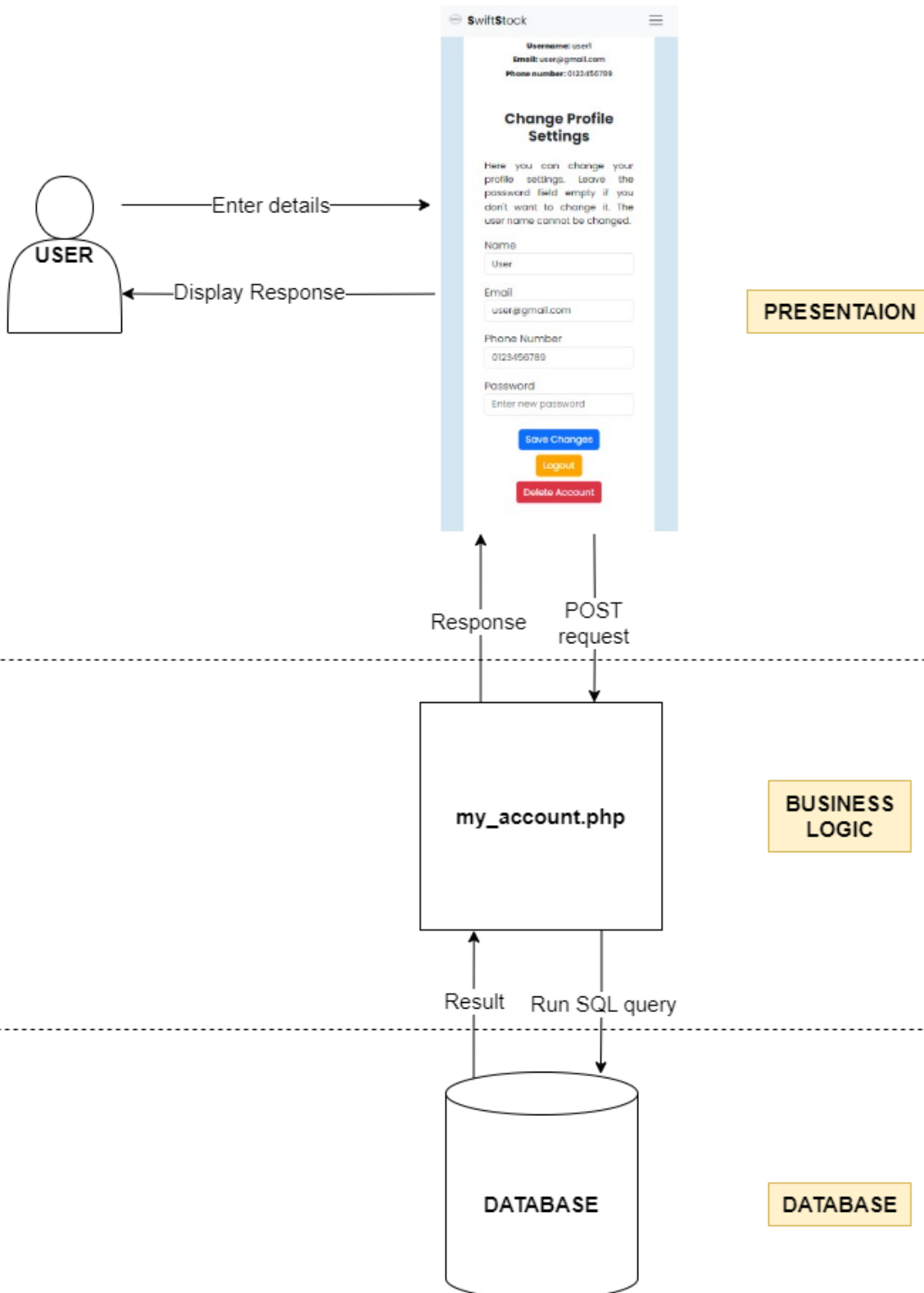
This allows users to view their profile information, such as their name, email, and phone number.



15. Update Account

Edit Account

This page allows users to update their profile information, such as their name, email, phone number and password if needed.



16. Delete Account

Delete Account

This page users provides an option for users to delete their account. When this option is selected, the user's data is removed from the database, and the user is logged out and redirected.

